

ABSTRACT

An electrochemical capacitor cell is provided. The cell includes a cathode having a coating of an amorphous metal oxide, and an anode having a coating of an amorphous metal oxide. An electrolyte layer is disposed between the cathode and anode, and first and second current collectors are disposed, respectively, adjacent the outer surfaces of the cathode and anode. A conductive resin coating then surrounds the exterior surfaces of the cathode and anode and their respective current collectors to provide an exterior packaging having rigidity and strength for the cell. Additionally, a process for forming the light-weight reinforced capacitor is provided. The process includes creating a die member having first and second mating components. The first component is in the form of a die mold having a recessed area, and the second component is in the form of a mating die punch sized and shaped to fit the recessed area of the first component. At least one electrochemical capacitor cell is sandwiched between a pair of fibrous sheet preforms to form a preform sandwiched capacitor. The preform sandwiched capacitor is positioned in the recessed area of the die mold, and epoxy resin is then placed in the recessed area having the preform sandwiched capacitor therein. The second component mating die punch is then compressed into the recessed area to force the epoxy resin into the preform sheets and encase the sandwiched capacitor. The compression is maintained for a time sufficient to cure the epoxy resin. Finally, the second component mating die punch is withdrawn from the first component recessed area, and the resin encased sandwiched capacitor is removed.